

CLAIMS:

1. A method for analyzing an electronic circuit, the method comprising steps of:
 - (a) replacing at least one timing determinant block in a first functional component of the circuit with a timing element set;
 - 5 (b) performing a circuit simulation for a cross-section of the first functional component to determine timing characteristics associated with each replaced timing determinant block of the first functional component;
 - (c) attaching the timing characteristics associated with each replaced timing determinant block to the respective timing element set which replaced the
10 respective timing determinant block, thereby creating a timing model for the first functional component; and
 - (d) performing a static timing analysis for the circuit utilizing the timing model for the first functional component.
- 15 2. The method of Claim 1 further comprising the step of:
 - (a) identifying an additional functional component from the circuit to be analyzed.
3. The method of Claim 2 further comprising the steps of:

- 5 (a) replacing at least one timing determinant block in the additional functional component with an additional timing element set;
- (b) performing a circuit simulation for a cross-section of the additional functional component to determine the timing characteristics associated with each replaced timing determinant block of the additional functional component;
- 10 (c) attaching the timing characteristics associated with each replaced timing determinant block of the additional functional component to the respective timing element set which replaced the respective timing determinant block, thereby creating a timing model for the additional functional component; and
- (d) wherein the step of performing a static timing analysis for the circuit also utilizes the timing model for the additional functional component.

4. The method of Claim 1 further including the step of:

- 15 (a) selecting the cross-section of the first functional component to produce a worst-case timing path through the functional component.

5. The method of Claim 1 further including the step of:

- 20 (a) selecting the cross-section of the first functional component to produce a best-case timing path through the functional component.

6. The method of Claim 1 further including the step of:
- (a) developing a group of timing elements for use in producing timing element sets suitable for replacing a number of different timing determinant blocks.
- 5 7. The method of Claim 1 wherein each timing determinant block in the first functional component is replaced with a respective timing element set.
8. A method of producing a timing model for use in static timing analysis for an electronic circuit, the method comprising the steps of:
- 10 (a) replacing at least one timing determinant block in a functional component of the circuit with a timing element set;
- (b) performing a circuit simulation for a cross-section of the functional component to determine timing characteristics associated with each replaced timing determinant block of the functional component; and
- 15 (c) attaching the timing characteristics associated with each replaced timing determinant block to the respective timing element set which replaced the respective timing determinant block.
9. The method of Claim 8 further including the step of:

- (a) selecting the cross-section of the functional component to produce a worst-case timing path through the functional component.

10. The method of Claim 8 further including the step of:

- (a) selecting the cross-section of the first functional component to produce a best-case timing path through the functional component.

11. The method of Claim 8 further including the step of:

- (a) developing a group of timing elements for use in producing timing element sets suitable for replacing a number of different timing determinant blocks.

12. The method of Claim 8 wherein each timing determinant block in the functional component is replaced with a respective timing element set.

13. The method of Claim 8 wherein the cross-section for the circuit simulation is selected to provide information on a first signal path through the functional component and further including the step of performing a second circuit simulation for a different cross-section of the functional component to determine timing characteristics associated with each replaced timing determinant block of the functional component for that different cross-section.

14. A method for employing timing elements to create a timing model for a functional component of a circuit, the method comprising the steps of:
- (a) defining a group of timing elements, each timing element in the group comprising an element for representing at least a portion of the timing characteristics associated with a timing determinant block within the functional component;
 - (b) replacing at least one timing determinant block in the functional component with a timing element set including one or more of the timing elements from the group of timing elements;
 - (c) performing a circuit simulation for a cross-section of the functional component to determine simulated timing characteristics associated with each replaced timing determinant block of the functional component; and
 - (d) attaching the simulated timing characteristics associated with each replaced timing determinant block to the respective timing element set which replaced the respective timing determinant block.
15. The method of Claim 14 further including the step of:
- (a) selecting the cross-section of the functional component to produce a worst-case timing path through the functional component.

16. The method of Claim 14 further including the step of:

- (a) selecting the cross-section of the first functional component to produce a best-case timing path through the functional component.

17. The method of Claim 14 wherein each timing determinant block in the functional component is replaced with a respective timing element set.

18. The method of Claim 14 wherein the cross-section for the circuit simulation is selected to provide information on a first signal path through the functional component and further including the step of performing a second circuit simulation for a different cross-section of the functional component to determine simulated timing characteristics associated with each replaced timing determinant block of the functional component for that different cross-section.